US 20190042041A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2019/0042041 A1**

Rothkopf et al. (43) **Pub. Date: Feb. 7, 2019**

(54) **ELECTRONIC DEVICES WITH FLEXIBLE DISPLAYS**

(71) Applicant: **Apple Inc.**, Cupertino, CA (US)

(72) Inventors: **Fletcher R. Rothkopf**, Los Altos, CA (US); **Scott A. Myers**, San Francisco, CA (US); **Stephen Brian Lynch**, Portola Valley, CA (US)

(21) Appl. No.: **16/147,253**

(22) Filed: **Sep. 28, 2018**

Related U.S. Application Data

(63) Continuation of application No. 14/467,657, filed on Aug. 25, 2014, now Pat. No. 10,088,927, which is a continuation of application No. 13/171,295, filed on Jun. 28, 2011, now Pat. No. 8,816,977.

(60) Provisional application No. 61/454,894, filed on Mar. 21, 2011.

Publication Classification

(51) **Int. Cl.**

G06F 3/041	(2006.01)
G06F 3/01	(2006.01)
G06F 1/16	(2006.01)

(52) **U.S. Cl.**

CPC .. ***G06F 3/0412*** (2013.01); *G06F 2203/04102* (2013.01); ***G06F 3/0414*** (2013.01); ***G06F 1/1652*** (2013.01); ***G06F 3/041*** (2013.01); ***G06F 3/016*** (2013.01)

(57) **ABSTRACT**

Electronic devices may be provided that contain flexible displays and internal components. An internal component may be positioned under the flexible display. The internal component may be an output device such as a speaker that transmits sound through the flexible display or an actuator that deforms the display in a way that is sensed by a user. The internal component may also be a microphone or pressure sensor that receives sound or pressure information through the flexible display. Structural components may be used to permanently or temporarily deform the flexible display to provide tactile feedback to a user of the device.